Volume XIX

Number 7

SECTION ONE

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DISEASES OF THE NERVOUS SYSTEM

A Practical Journal on Psychiatry and Neurology

JULY

1958

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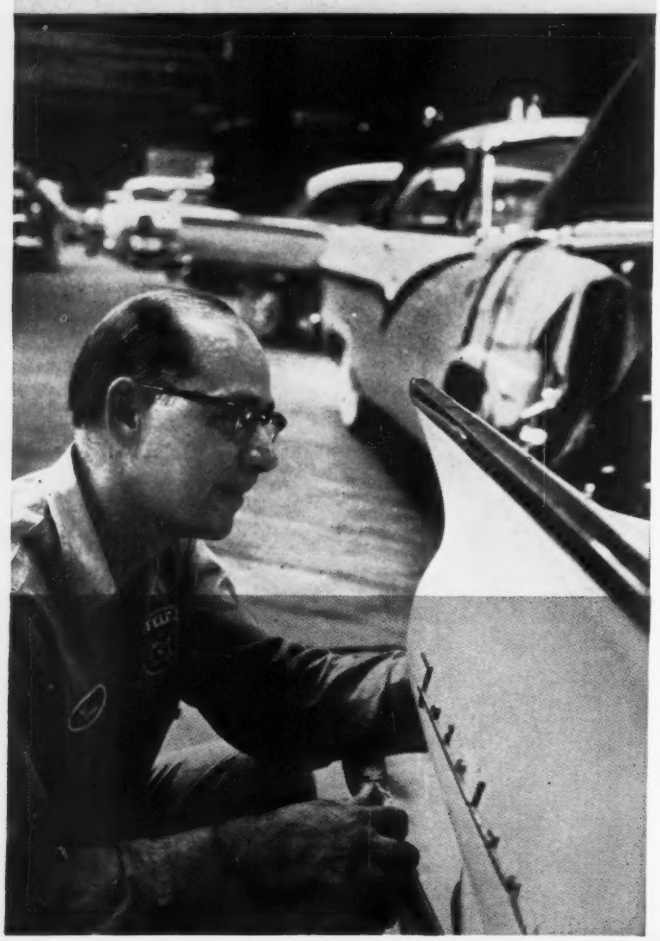
this discharged mental patient may suffer a relapse



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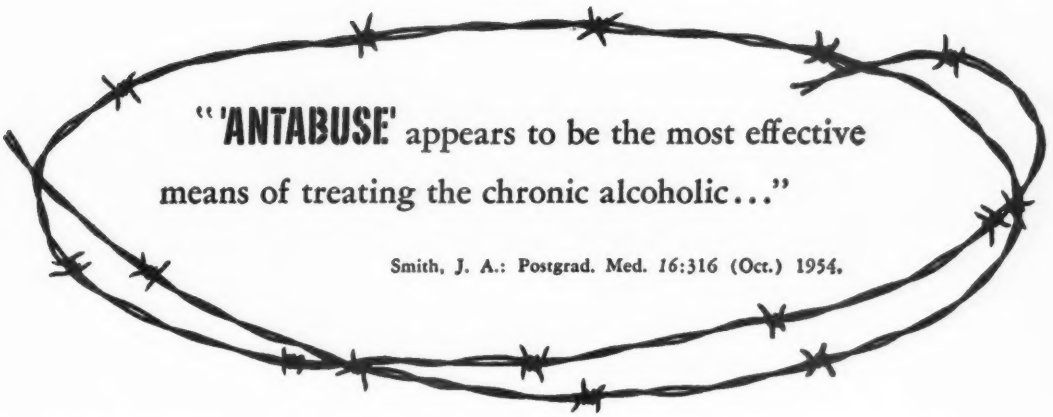

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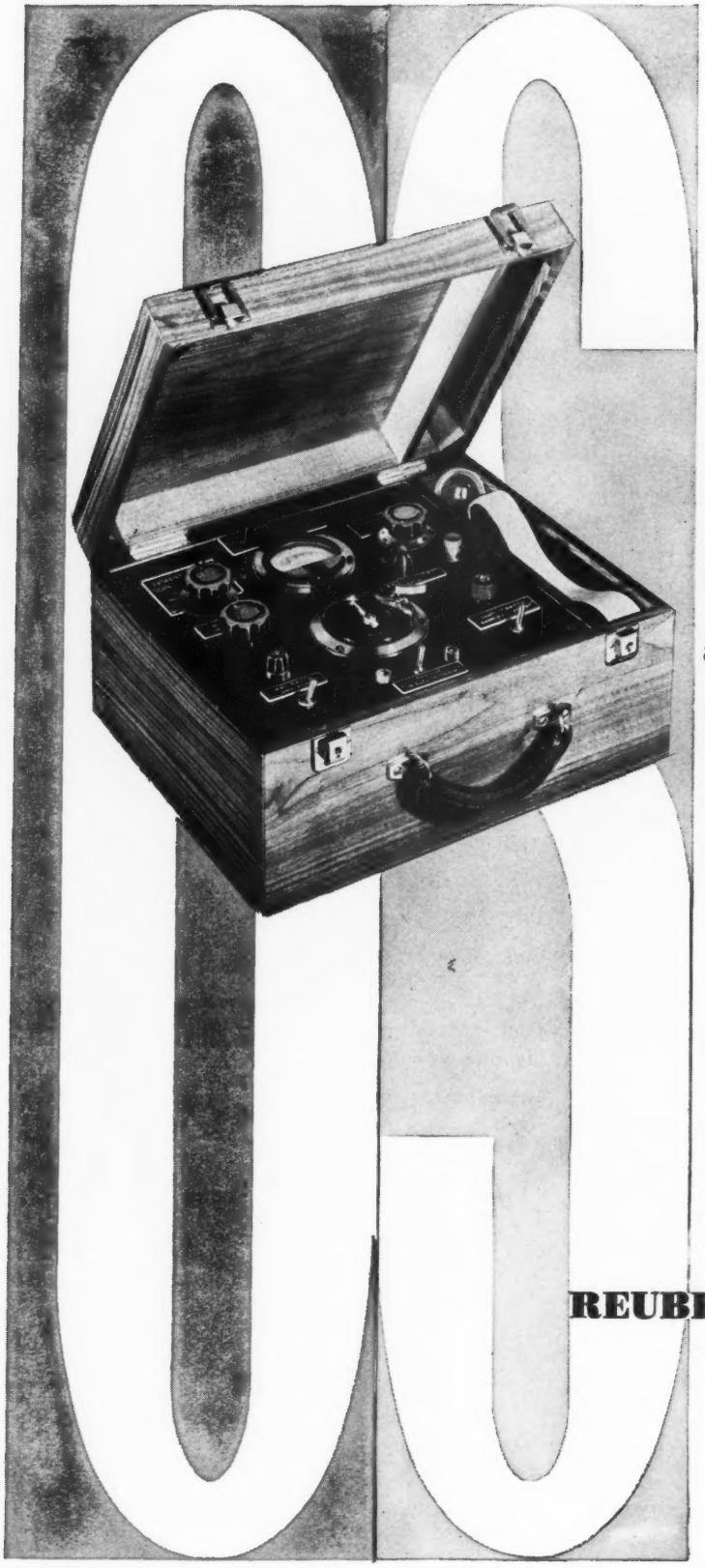

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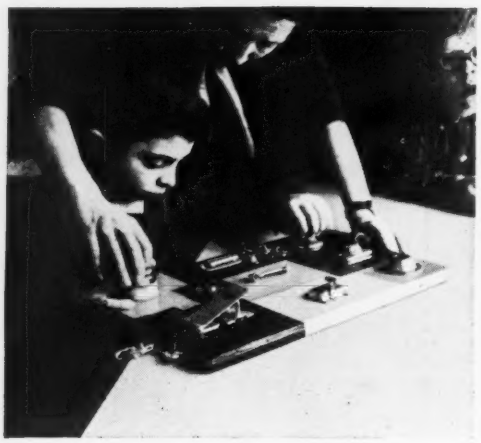

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Volume XIX JULY 1958 Number 7

DISEASES *of the* Nervous System

A PRACTICAL JOURNAL ON PSYCHIATRY AND NEUROLOGY

"The Basis of Effective Military Psychiatry"

ERIC BELL, JR., M.D.

A large number of psychiatrists in the United States have served in the Armed Forces during World War I or II or the Korean War and, therefore, are familiar with the problems which were encountered in the treatment of psychiatric patients in the military. Often, in World War I, soldiers who exhibited disabling psychiatric illnesses were given the organic label "shell shock" and were evacuated to the rear. This term gave an air of respectability and honor to the illness so that veterans' hospitals were frequented for years by many patients claiming to have had so-called "shell shock" to which they attributed a large number of ill-defined symptoms. A great deal was learned about the treatment of combat psychiatric cases in World War I but, unfortunately, the information seemed to have made little impression on post-war military psychiatry.

In World War II psychological breakdown prior to induction, before going overseas, or during combat was viewed by the psychiatrist as being the resultant of a temporal cause and effect focused on certain individuals with predisposing factors. The temporal or precipitating cause was thought to be the traumatic psychological event which occurred just prior to the time the patient was seen by the psychiatrist. It was conceded that everyone had his particular breaking point which depended both on the amount of external stress imposed and on his degree of vulnerability or predisposition due to his heredity and past environmental conditioning. Thus, as Dr. Albert J. Glass[1] pointed out, a simple stress-predisposition formula was established by which the psychiatrist could explain neatly any psychiatric abnormality as the inevitable result of a stress which was too great or a predisposition which was overly-vulnerable or both in varying degrees. Actually, it has always been impossible to weigh accurately the amount of stress on an individual and virtually impossible to evaluate properly his predisposition to a psychiatric illness which might be incapacitating. This stress-predisposition formula, according to Dr. Glass, gave a defeatist outlook to any program of prevention and treatment since both elements of the formula were beyond the control of the psychiatrist or the patient. Therefore, psychiatric casualties who were being examined by a psychiatrist were consciously and unconsciously influenced to determine their own breaking point and, thus, to utilize a socially-acceptable type of failure of adaptation rather than to bear the discomforts and hazards which lay ahead.

Dr. William C. Menninger[2] outlined in detail the numerous reasons why the practice of psychiatry was a frustrating experience throughout World War II. Much of a psychiatrist's job was simply that of diagnosis and rejection or discharge of the patient. In areas of combat very little therapy could be given. Prolonged rest, narcosynthesis, heavy sedation with barbiturates and even psychotherapy did not produce the desired results in a large percentage of cases. This is understandable because, as Dr. Glass[3] stated, "the therapist had little to offer the patient compared with the tangible benefits of remaining disabled." Many soldiers were discharged after induction with the diagnosis, rightly or wrongly, of psychoneurosis. Army directives made it mandatory for any patient diagnosed as having a psychoneurosis to be discharged from service. Line officers put pressure on the medical officers to dispose of their non-effectives in this way. Many individuals with minor psychoneurotic symptoms took advantage of this situation

in order to escape from service. Brigadier General Elliott D. Cooke,[4] in his book, states that in the spring of 1943, nearly as many men were being discharged from the army as were being inducted, and that more men were getting out of the Army than were being sent across the Pacific to fight the Japs. The major single cause for medical discharge was psychoneurosis.

In World War II a certain amount of light was shed on the psychiatric treatment of the psychological disorders of war. It was discovered that two major factors of therapy were brief psychotherapy and alleviation of physical fatigue. Also, there was noted a type of reaction occurring after prolonged combat experience which has been termed "the old sergeant syndrome" in which men of established bravery exhibit anxiety, depression, tremulousness and impairment of self-confidence and judgment, usually after 150 to 350 days of combat. In spite of the presence of certain relatively rare, incapacitating psychiatric illnesses in combat troops, it must have been obvious to every psychiatrist what is known to every layman, as Dr. Francis Braceland[5] has pointed out, "that an individual can, by his own free choice, decide not to do his duty." It was noted consistently that the farther the patient was sent away from the front line the fewer ties he had with his unit, the lower his motivation for returning to duty and the lower his morale for combat, so that by the time he was entered into a permanent military hospital for treatment the chances of returning him to duty were greatly diminished.

According to statistics from the department of the surgeon general, the Army accepted slightly over 10,000,000 men during World War II, of which number approximately 1,363,000 were given medical discharges, 39 per cent of which were for neuropsychiatric disease. Of this group 69 per cent were separated with a diagnosis of psychoneurosis. In contrast to this in the Korean War during 1953 (the only year for which statistics are available) only 26.9 per cent of the medical discharges were due to neuropsychiatric disease and of this number of neuropsychiatric casualties only 30 per cent were due to psychoneurosis as opposed to the previously mentioned 69 per cent of the neuropsychiatric casualties in World War II. Such a difference indicates a change for the better in psychiatric management and treatment.

Unfortunately, most of the Army physicians who cared for psychiatric casualties at the beginning of the Korean war appeared to have had almost the same attitude as did the psychiatrists of World War II. This was demonstrated by the fact that in August 1950, soon after the outbreak of hostilities, the psychiatric incidence rate for Korea was 250 per thousand per annum.[6] Under the guidance and direction of very able Consultants in Psychiatry for the Far East Command, Dr. Albert J. Glass and Dr. Donald B. Peterson, different concepts and techniques were taught to both division and rear echelon psychiatrists so that for the first six months of 1953 the psychiatric incidence rate for Korea was only 21 per thousand per annum, less than 1/10 of the proportion previously mentioned in August 1950. It was significant that the non-commissioned officers of the units rated 41 per cent of returned-to-duty psychiatric in-patients as average or better in performance and only 9 per cent as inferior. The effectiveness of the psychiatric concepts utilized during the Korean War was indicated also by the fact that of 347 in-patients evacuated to the United States from Korea, 314 were psychotic. The two additional major changes in psychiatric care which were added in the Korean war, and which did much to make this tremendous difference in the number of psychiatric patients who were declared unfit for duty, were: (1) the removal, as far as possible, of the factor of gain in psychiatric illness and (2) the recognition of free will as a basic concept in psychiatric therapy.

The factor of gain was avoided, according to Dr. Peterson,[7] by "avoiding the delusion that evacuation is intrinsically therapeutic." The "evacuation forward" of psychiatric patients proved to be a very helpful operation and procedure. Corps troops were referred forward to the nearest division psychiatrist for examination and the most obstinate psychiatric cases were transferred from hospitals in southern Korea north to the treatment center in Seoul for final evaluation. The psychiatric treatment center at Seoul, which

was opened in 1952, was the only psychiatric installation which had the authority to evacuate non-psychotic psychiatric patients from Korea. The obvious therapeutic factor was that the psychiatric patient realized he would be moved closer and closer to the area of combat the longer he remained ill.

The second major difference between World War II psychiatry and Korean War psychiatry was the change in attitude towards the combat soldier by the psychiatrist himself—a change which inherently implied the acceptance of the soldier as a morally responsible individual who either could fold up as the situation became more hazardous or could go on in spite of the multiplicity of symptoms which he might develop due to his fear and anxiety. Several things helped to change the attitude of the psychiatrist. The major item was the decentralization program which allowed treatment as far forward as possible. There the therapy could be given earlier, as Dr. Glass[8] says, "during the amorphous and reversible stage of psychological breakdown before the time and distance components of evacuation have hardened the temporary condition into a chronic neurosis." In addition, the patient was given a hot meal, a short rest, brief explanations of the physiological cause of his symptoms and some reassurance and was subjected to a "duty expectant attitude" on the part of the psychiatrist, all of which further decreased the incidence of psychiatric casualties. The "duty expectant attitude" which the Korean War psychiatrist maintained was simply the attitude that every man, despite his anxieties, was expected to perform the service for which he had been sent to Korea. This attitude on the part of the psychiatrists and personnel involved in the management of psychiatric casualties was much easier to maintain when they themselves were in the forward area because they had first-hand knowledge of the combat situation therefore, knowing the group needs, they found it easy to identify with the group rather than with the individual patient. This shift in attitude occurred without anxiety or guilt when the medical personnel functioned in the combat zone. They realized that they themselves were remaining at their respective duty stations because they willed to do so, therefore, they expected others to exert their free wills in returning to their duties in combat. Since division psychiatrists were under enemy fire themselves they were able to avoid the unrealistic recommendations and dispositions that so frequently characterized decisions of medical personnel who had had little practical knowledge of duties and functions in the combat zone. The division psychiatrist was aware that rapid recovery from temporary breakdown was not only possible but was the expected result in most cases.

Peterson and Chambers[9] sum up the problem by pointing out that the young man in America has generally had only vicarious experience in the stern business of sacrifice for the sake of duty; has had little call to live dangerously and has been well-conditioned to regard aggressiveness as an uncustomary and dangerous thing. They state, "Another concept derived from our culture is the belief that illness relieves a man from obligation and responsibility. . . . Closely allied to the above is the concept that, despite the fact that people do die, any doctor worth his salt can cure any disease or injury or, at the very least, render any condition asymptomatic so that continuation of discomfort may illogically be held to be the sole responsibility of, and due to the failure of, the doctor. . . . It may seem unkind to require further duty of a person who is anxious and uncomfortable, but the greatest psychiatric mishandling, and the greatest possible unkindness, is the medical evacuation of the patient who has not yet performed with the degree of honor required of him by both his superego and the community as he sees it, aiding him to burn his bridges behind him and making his guilt irrevocable." They point out that psychoneurotics not only can but do make good soldiers if the pathological and helplessly or aggressively immature personalities are excluded.

This attitude on the part of the division psychiatrist was good for the morale because as Dr. Albert J. Glass[10] stated: "Evacuation of psychiatric casualties away from the combat zone cannot fail to communicate to other combat participants that discomfort, tension and fear is an illness of suffi-

cient severity to require treatment and removal from battle." The combat soldier has group identification and pride. He wants to retain his honor but there is also the inevitable conscious and unconscious awareness that survival may be obtained by leaving the scene of battle and that honor may be preserved by medical evacuation. Statistics seem to indicate that most Americans find that they can bear much more anxiety and discomfort than they have believed if honor requires it.

It is true that both the dynamics and the attitudes of combat psychiatry are foreign to the formal training and experience of most of us but this is because the preponderance of formal training in psychiatry does not take into consideration the true nature of man. Most embryo-psychiatrists are led by indoctrination to believe in the Freudian, materialistic and behavioristic concept that man is not responsible for his actions; therefore, the Korean War combat psychiatry certainly was foreign to him in that it placed the responsibility on each individual to continue to shoulder his burdens and to fight on. For the first time, the young psychiatrist had to face squarely the psychiatric implications of the common words "honor" and "courage." Courage is certainly not the absence of fear because no one who is normal is free from fear in a situation in which his life is endangered. Dr. Alexander R. MacLean[11] of Mayo Clinic, who served in the Armed Forces in World War II, made these pertinent remarks in a commencement address at the University of Manitoba School of Medicine, July 1946:

> "Courage, as it is usually encountered, is that moral quality in the face of fear, difficulty and danger from which springs unselfish conduct. Cowardice, on the other hand, is a quality which, when fear is a motive, results in selfish behavior that is contrary to the mores of the group. Prior to the evolution of psychiatry a man was judged by his acts in battle which were either courageous, neutral or cowardly. He was expected to be a responsible, moral individual with ability to distinguish right from wrong, an individual who had a will capable of directing his actions according to the dictates of his intellect and appetite—in fact, there were simply courageous men and cowards in peace and war. In the last century, however, the causes of behavior of adults have been traced in the same individual as far back as intra-uterine life. . . . With this increasing popular recognition of the impact of an individual's past on the present and future behavior, the ethics of our civilization have correspondingly been interpreted in Freudian and behavioristic terms . . . and yet if we are to admit that there are such qualities as courage and fortitude we must equally insist that there are cowardice and weakness of character. For if we turn our faces away from the possibility of unethical behavior, the decorations of our men for valor in battle and our verbally-expressed appreciations of the sacrifices that men have made of their limbs and lives in the defense of their country, become worthless, hypocritical awards given by cynical people."

During World War II all branches of the Armed Forces exhibited a strangely illogical type of thinking. Army, Navy, and Marine Corps were quite willing to admit that there were many brave men in battle. Certainly thousands of decorations and awards were given to these individuals who showed outstanding valor in the time of crisis—action above and beyond the call of duty. Congressional Medals of Honor, Silver Stars, etc., were awarded to men who went forward rather than backward at times when their lives were in danger. Yet, at the same time, the same military forces seemed to be very unwilling to recognize the quality of cowardice. Few men seemed to feel able to accuse any one particular individual and to condemn either him or his actions. Probably a great deal of this hesitation was due to the fact that no man knows how courageous he himself is. Each one of us is secretly afraid that we, caught in the same circumstances, would turn and run. Yet, obviously, it should be fundamental in the thinking of everyone that if there is such a thing as bravery, there is such a thing as cowardice, and that both should be recognized and should be taken into consideration. The line officers of the armed forces who, either from a misguided feeling of charity or from their own feelings of inadequacy, were unwilling to discipline cowardice in any of the troops could always "pass the buck" to the medical department, and, in particular, the psychiatric department in World War II. If a man threw away his rifle in the heat of combat and rushed to the rear, or if he refused to return to his battle station he more than likely would be led eventually to the division psychiatrist. If his symptoms persisted he would be sent ul-

timately to a hospital in the rear where a psychiatrist could help him to rationalize his cowardice on the basis of the so-called "stress-predisposition factor." In other words, World War II was a strange war in which we had much official recognition of brave men but little official recognition of cowards. To the soldier who was unwilling to exert his will power in staying on the scene of combat there was always held out the implied suggestion that there was a morally acceptable way out of his stresses and strain by means of medical evacuation through the psychiatric department.

In civilian life, these men had accepted their relative disabilities and their tensions. They had faced their personal problems with or without psychiatric help and willingly or unwillingly had assumed obligations on a social and economic level. When these individuals went into the armed forces, however, tens of thousands of them discovered their symptoms were sufficient to excuse them from the labors, the uncertainties and the dangers of war. They discovered there was nothing to be expected from enduring their symptoms except hardship and perhaps death. There was no penalty for failure. Weakness was rewarded by honorable medical discharge and large numbers took conscious or unconscious advantage of this attitude and rendered their disabilities absolute instead of relative. Instead of accepting the help medical science could offer them, untold numbers resisted therapy and consciously or unconsciously searched for new nervous symptoms to thwart return to duty. After they received honorable discharge, they returned to their families with documentary proof that they were victims of disease in war and were not responsible for helping themselves to the same degree that they had done so prior to their armed forces service. Many, because of pride or because of Veterans Administration compensation, consciously or unconsciously, protracted their symptoms for extended periods of time after release. Thus it seems evident that psychiatric theory and practice during World War II appeared to promote the loss of moral fibre of men in war.

It is also evident that we are dealing with two separate divisions of disturbances of the psyche. One is a severe and disabling psychoneurosis, an emotional disease, such as the previously mentioned "old sergeant syndrome," the pathogenesis of which rests more on the immediate environmental circumstances than on the remote evolution of the personality. The other is an ethical deflection, a wilful lack of determination to do one's duty—in other words, cowardice. It is understandable that the emotional disease and the defects in morality can be confused so that they are separated with the greatest difficulty. Certainly psychiatry has no scientific test for fraud and it cannot differentiate the malingerer from the psychoneurotic person by an objective method nor can it quantitatively assess the degree of conscious exaggeration of symptoms by a person who is troubled with a functional disability. For that reason it is absolutely necessary to utilize fully and to improve the system of treatment of psychiatric casualties which was used in the Korean War. The psychiatrists treated each terrified soldier and each psychoneurotic with charity, gave them the best psychiatric therapy available, and allowed them a brief respite to collect themselves but always adopted a consistent "duty-expectant attitude" and never gave the patient the idea that the psychiatric department would prostitute itself. This left the men with the distinct impression that they themselves could will the good by doing their duty, or could will the contrary and could get out of service by the means of a blue discharge.

It was very unfortunate that psychiatry was forced into the unenviable role which it held in World War II. It is deplorable that many psychiatrists accepted a major part of the responsibility for failure in cases of loss of morale and even, at times, theoretically and practically identified loss of courage with emotional disease. If such confusion continues, we, as psychiatrists, must bear the full consequences. Ethical defects concern the whole of our society. We cannot ignore the true nature of man and the obvious fact that he has a free will to do what he wants to do, regardless of the amount, degree, or type of psychiatric therapy. Certain psychiatrists are claiming too much at the present time for the beneficial effects of

psychotherapy in regard to criminal behavior, to sex offenses and to other areas of public and interpersonal relations. We must realize the fact that moral and volitional defects very often are the cause of the abnormalities of behavior that fill our prisons and divorce courts, as well as the fact that some are due to the irresponsible disorders of mental and emotional disease. In spite of behavioristic and Freudian concepts many men demonstrate selflessness and courage in times of peace as well as war. In defense of such courage Dr. MacLean is correct when he states that it is "the duty of psychiatry to reevaluate the functional disabilities of our civilization in the light of ethical principles of conduct as well as from the standpoint of theories related solely to psychogenesis."

Psychiatry has widened its boundaries far beyond its abilities to cope with the problems which it claims to encompass in its sphere or which it engenders. We, as psychiatrists, are overly fond of taking on problems which we are incapable of treating effectively at the present time. This is particularly true in the field of criminology. The concept of free will in man who is a morally responsible individual of society is the underlying basis of all criminal law; therefore, if we, as psychiatrists, promote a theory of psychiatry which denies this principle, we are undermining our legal system, thus the ultimate detrimental effect on society is inevitable. Just as in time of war it undermines the morale of the entire army for the concept to predominate that there are brave men but that there are no cowards, merely, the emotionally sick men; just so, the morals of a civilization will be undermined if that society professes that there are good men but that there are no bad men, merely sick men who need psychiatric help.

The basic principles, then, of military psychiatry, to be effective, cannot be very far removed from those of effective civilian psychiatry. Admittedly, there is a tremendous shortage of psychiatrists everywhere in the world today, but the problems of this world will never be solved merely by increasing the number of psychiatrists if these psychiatrists have the wrong ideas concerning man himself. Good psychiatry ultimately depends on the psychiatrist's correct concept of the nature of man. If we believe a theory of psychiatry which is purely materialistic and deterministic, we cannot evade the false idea that man is simply an irresponsible automaton, merely a product of his heredity and his environment. The true concept of the nature of man, however, conceives of man as God created him—with a body and a soul. The soul has the faculties of the intellect and the free will. The object of a man's intellect is always to find the truth, the object of his free will is always to seek what is good. Thus he has an intellect which can decide between right and wrong, and a will which can choose to do what is right. He can choose good or evil, bravery or cowardice, God or mammon. This true concept of the nature of man will promote in society the feelings of moral and social responsibility and of obligation to do what is morally right in both military and civilian life. It is the fundamental basis of effective military psychiatry.

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Factors Affecting Results in Psychotherapy

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Introduction

There is little doubt that the psychotherapy of psychotics is enjoying tremendous prestige and evoking great interest among professional personnel of our mental hospitals. There is a surprising lack of information in the literature about the outcome of psychosis treated by psychotherapy. When one considers the enormous amount of time and expense involved in the training, supervision and practice of psychotherapy, it seems essential to compile data as to the factors affecting the results of the treatment.[1]

During the period October 1951 to October 1952, 229 male patients were admitted to the acute disturbed unit of the Palo Alto Veterans Hospital. Of these patients 18 were treated primarily by psychotherapy. This follow-up study is an attempt to delineate certain factors in these 18 patients which were apparently related to improvement.

The period selected was the time at which one of us (GK) became administrative head of the unit and, hence, had some experience with every patient. Also, by this time the interest in treating hospitalized patients with psychotherapy was well established, and visiting consultation (DJ) for psychotherapy was available.

For the purpose of this study, psychotherapy was defined as regular interviews of not less than two per week and lasting at least over a two month period. The data were collected from psychiatric records and augmented by social service reports, psychological reports, ward physicians' opinions, and therapy records. All but seven of the 229 charts were available to us.

The difficulties in establishing satisfactory criteria for evaluating improvement are well known. Methods using such factors as whether the patient has been discharged, has open ward privileges, and the like, are distorted by such things as pressures from the family or their lack of interest, patients leaving against medical advice, and so on. Instead we have used a 3 point rating scale (great, moderate, little) on four spheres of psychological and interpersonal functioning, the criteria by the staff in making administrative decisions about patients. Each chart was reviewed individually and each item was rated independently. The spheres rated were: 1. developing insight; 2. improving judgment; 3. better control of feelings; and 4. increasing ability to relate satisfactorily.

Table 1 represents a summary of these ratings with (M) for moderate or great improvement, and (L) for little or no improvement:

TABLE 1

Spheres of Improvement	No. Patients	
4M	6	"improved"
3M plus 1 L	2	
2M plus 2 L	3	"unimproved"
1M plus 3 L	2	
4L	5	

The result is a "U" distribution with most patients being rated as showing great or moderate improvement in all spheres, or little or no improvement in all spheres.

For the purposes of this report, an "improved patient" is one who showed moderate or great improvement in at least 3 of the four spheres and an "unimproved patient" showed two or more spheres of little or no improvement. Hence, 44% are "improved" (I) and 56% "unimproved" (U).

It was then decided to try to find out the situation of the total group of 18 patients on October 1, 1955, approximately four years after these men were admitted to the acute disturbed service. Of the group, two are out of the hospital and reported as well, five are out of the hospital but their whereabouts cannot be ascertained, six are in our hospital and privileged, one is in our hospital and not privileged, and four are in other mental hospitals. With regard to the five out of the hospital but whereabouts unknown, it can be presumed that they are not hospitalized

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because if they were, the V. A. would have been informed.

In comparing the Improved and Unimproved groups, Table 2 shows that a strikingly higher ratio of our Improved group is out of the hospital, and a strikingly higher ratio of our Unimproved group is in a hospital.

TABLE 2

	Out	Hospitalized	
U	2	8	(X^2=3.37)
I	5	3	

This would indicate our administrative criteria are correlated to a significant degree with a patient's ability to function in or out of the hospital.

Follow-Up

The period from the time psychotherapy was begun until the evaluation was made had a range of two to 61 months with a mean of 28.8 months and a sigma of 17.3.

The total time from admission to the time of evaluation for the two groups is approximately the same, around two to 2½ years, the difference between the means being not statistically significant.

There is a wide discrepancy in the interval between discontinuing psychotherapy and the evaluation in the Improved vs. Unimproved groups. The mean of the Improved group lapse is .5 months and the mean of the Unimproved group is 18.5 months, a statistically significant difference. The Unimproved group tends to have psychotherapy of a shorter duration and to remain hospitalized. The Improved group in contrast tends to have a longer duration of therapy, is still in psychotherapy at the hospital or as an outpatient, or has recently terminated therapy.

Diagnostic Classifications:

An attempt was made to classify patients with regard to symptomatology recorded on admission. Diagnostic impressions recorded by the physician working up the patient and/or by the therapist involved were used. The break-down is represented in Table 3.

TABLE 3

	No.	%
Schizophrenia	9	50
Character disorder	3	17
Anxiety reaction	4	22
Depressive reaction	2	11

Comparisons of Improved - Unimproved groups is shown in Table 4.

TABLE 4

	Improved	Unimproved
Schizophrenia	4	5
Depressive reaction	2	0
Anxiety reaction	2	2
Character disorder	0	3

Apparently in our hospital, a continuum of prognosis for psychotherapy based on diagnosis might be hypothecated with the depressive reactions at the good prognosis end, the character disorders at the poor prognosis end, and the neurotic and schizophrenic group in between. Experience in supervision at this hospital would indicate that the patients with diagnoses at the "good" end of the continuum are also those with whom therapists become more benevolently involved.

Symptoms Requiring Admission to Disturbed Unit

Eleven percent (2) of these patients were admitted to the disturbed ward as "confused," 28% (5) "assaultive," 33% (6) "suicidal," and 28% (5) as "intoxicated." Comparison of Improved-Unimproved groups is shown in Table 5.

TABLE 5

	Confus.	Assaul.	Suicidal	Intox.
I	0	3	5	0
U	2	2	1	5

Thus from this standpoint, a patient admitted as alcoholic, regardless of other symptomatology, did not respond to psychotherapy. On the other hand, psychotherapy appeared to be relatively successful in the patient who was depressed or suicidal. The two confused patients did not respond to psychotherapy whereas the assaultive patients were nearly equally distributed in the improved and unimproved groups. We feel it is possible that self-destructive, self-depreciating, or assaultive patients are able to

manifest more effective interaction with hospital personnel than the initially intoxicated or confused patients.[2]

Of the 18 patients under study 14 (78%) were voluntary and 4 committed. The two groups did not significantly differ in response to psychotherapy.

Social Data

The group was studied from the standpoint of age factors, previous hospitalizations, marital status, and stated occupation.

From Table 6 it would seem that the group is a somewhat older group at the time psychotherapy was begun than might be considered ideal; and that on the average, there has been a 4½ year lapse since the first hospitalization and the beginning of this therapy. The small difference between first symptomatology and first hospitalization might be explained by the fact that recognized symptoms usually leads to rapid hospitalization in the service population.

TABLE 6

	Improved	Unimproved	Mean of Entire Group
Age 1st symptom	28.3	27.7	28 2
Age 1st hospitalization	29.8	28.8	29.2
Age at time of Rx	33.4	33.7	33.5
Time lapse between first hospitalization and this Rx	3.6	4.9	4.3

The similarity of the two groups is striking except in regard to the time elapsed between hospitalization and onset of psychotherapy. While this difference is not large, it is suggestive.

Number of Previous Hospitalizations:

The number of previous hospitalizations ranged from one to 13 with a mean of 3.7 and a sigma of 2.9.

The comparison of Improved-Unimproved groups is shown in Table 7.

TABLE 7

(NUMBER OF HOSPITALIZATIONS)

I	1	1	2	2	2	3	3	6		Mean 2.5
U	2	2	2	3	3	3	5	7	8	13—Mean 4.8

The comparison of means is not statistically significant; however, the indication is, as would be expected, in favor of frequent previous hospitalizations being associated with little improvement during psychotherapy. The table shows that both patients receiving psychotherapy during initial hospitalization are in the Improved group, whereas, those with a number of previous hospitalizations are generally in the Unimproved group.

Marital Status:

At the time of therapy, 28% of the patients were divorced, 44% married, and 28% single. The Improved-Unimproved comparisons are shown in Table 8.

TABLE 8

	I	U
Married	4	4
Divorced	1	4
Single	3	2

It is striking how free the improved group is of divorced men. Although the Chi square does not approach statistical significance, there is an indication that the improved group is composed largely of men who are able to remain married, or who, realizing their inability to maintain marriage relationships never have been married.

Military History

In attempting to find certain factors from the patients' military history that might be related to improvement during psychotherapy, length of service, type of discharge, and rank were studied.

The mean length of service for the entire group was 4 11/12 years ranging from 1 to 17 years. There were only two patients in the entire group who had less than 2 years military service.

When length of service of the Improved group is compared with the Unimproved group, the mean for the Improved group is 3 9/12 years and for the Unimproved group 5 10/12 years. Even though this difference may be due to chance factors, it is an interesting trend when coupled with the military rank finding.

Military Ranks:

Reducing all rates and grades to the Army system, it was found that the mean grade was staff sergeant, with 8 of the 18 patients

being privates or PFC and 5 of the patients being warrant officers or higher. By using a number system, the mean rank for the Improved group is 7.4 and for the Unimproved group is 3.2. PVT and PFC were assigned the number value of 1, Cpl 2, M/Sgt 6, Warrant Officer 7, 2nd Lt. 8, etc. with the highest rank in the group Lt. Col. 12. It was then possible to compare numerical means for the group to find statistical differences. By the "t test" this difference is found to be statistically significant beyond the .01 level.

It would seem that higher rank is related to improvement in psychotherapy and this is especially so if length of service is short. A man with a long military service who has been unable or unwilling to increase in rank apparently had difficulty in establishing the kind of relationship necessary for successful psychotherapy.[3,4]

Type of Discharge:

Consideration of type of discharge produced unexpected results. Of the total group 61 per cent received either retirement discharge or a certified disability discharge (CDD) with 39 per cent apparently having completed their military service without mishap. The Improved-Unimproved comparisons are shown in Table 9.

TABLE 9

	Retired and CDD	Regular Discharge
I	6	2
U	6	4

These figures would not support the commonly held belief that compensation mitigates against motivation for recovery. It is possible that those patients who obtained a regular discharge had a more chronic onset of their mental disorder, and, in addition that some ability in interpersonal relationships is required in some instances to obtain a retirement or CDD.

Prior Therapy

Fifty-five per cent of the group had prior somatic therapy. Comparison of the Improved-Unimproved groups is shown in Table 10.

TABLE 10

	Previous Somatic Rx	No Previous Somatic Rx
I	4	4
U	6	4

Although these differences are not statistically significant, the Unimproved group is composed of a greater proportion of patients who have had previous somatic therapy. The data with regard to previous psychotherapy was too incomplete to be useful for this report.

Medical vs. Non-Medical Therapists:

Eighteen (54%) of the therapists were physicians at various stages of psychiatric training; 12 (35%) were psychologists at various stages of training.

In comparing the Improved-Unimproved groups, it was found that although statistically not significant, the medical therapists had a greater ratio of improvement than the non-medical therapist as shown in Table 11.

TABLE 11

	Medical	Non-medical
I	10	5
U	8	8

This might be explained in that even though both were largely composed of training people, the medical therapists had had more experience in the doctor-patient relationship than the non-medical therapists.[3]

Number of Successive Therapists:

With regard to successive therapists, 12 (67%) of the patients had but one therapist; two had two successive therapists; two had three successive therapists; one had four successive therapists, and one had five successive therapists.

In comparing the Improved-Unimproved groups with regard to effectiveness of one therapist vs. more than one therapist, the Unimproved group had a slightly larger proportion of patients who had been seen by only one doctor than the Improved group as shown in Table 12.

TABLE 12

	One Therapist	Several Therapists
I	5	3
U	7	3

This difference does not approach statistical significance. If it is a true, and not a chance difference, it could be explained by assuming that duration of therapy is more important than number of therapists. How-

ever, other factors may play a part: e.g., if a patient and therapist form a good relationship it is likely to continue even if the therapist leaves the hospital; whereas, the therapist may use a change of service to break up an unsatisfactory relationship. In addition, though the patient with several therapists may become "psycho-allergic," he also increases his chances of encountering a really effective therapist.

Length of Therapy:

The mean duration of therapy for the group was 18.9 months with a sigma of 15.0 and a range of two to 52 months. Only four of the patients had less than six months of treatment; whereas, five had 30 or more months.

Comparing the Improved - Unimproved groups, the difference between the means (I:25.8 mos.; U:13.2 mos.) was significant at the .01 level, indicating that the longer a patient is in psychotherapy, the better his chance of improvement.[5]

Supervision:

Another factor studied was the relationship of case supervision to improvement in therapy. Eleven (35%) of the therapists were supervised and 20 (65%) unsupervised. Improved-Unimproved group comparisons are shown in Table 13.

TABLE 13

	Therapist Supervised	Therapist Unsupervised
I	2	13
U	9	7

Using Chi square method ($X^2=6.25$) improvement is statistically significantly related to therapy by unsupervised therapists.

This interesting finding led us to speculate that supervision might be an anti-therapeutic factor, especially with tyro-psychotherapists. We had noted occasionally that an unsupervised patient of a particular therapist might be making greater gains than his supervised patients, as if the therapist were more able to apply what he had learned when his relation to the supervisor was not involved.[6,7] There did not seem to be any justification for assuming that the supervised patients were *per se* more difficult to treat.

Another possibility is that supervised therapists are likely to be less experienced therapists and even though supervised, are less effective than unsupervised, experienced therapists. In this study, if 3rd year resident, staff psychiatrists, 4th year psychology trainees, and staff psychologists are considered experienced therapists (inexperienced therapists being 1st and 2nd year residents, 1st, 2nd, and 3rd year psychology trainees), then the relation of experience to supervision is shown in Table 14.

TABLE 14

	Supervised	Unsupervised	
Experienced	1	10	$X^2=5.20$
Inexperienced	10	10	

It is suggested that taking together the findings of lack of supervision being related to improvement and lack of supervision being related to experience, that therapists' experience is important in relation to improvement, a finding supporting the work of Myers and Auld[8] and Whitehorn and Betz.[9] Of course, in addition to more effective techniques, it must be remembered that the experienced therapists are better able to select cases that will respond.

Continuous vs. Interrupted Therapy:

Interruptions of therapy were studied from the point of view of whether the patient quit the therapist or the therapist left the patient. If the total number of therapeutic experiences are considered, i.e., the total times a patient was begun and terminated in therapy, it is found that in 13 instances the patients left the therapist, and in 17 instances the therapist left the patients. Of the patients who left their therapists, six of the 13 terminated because of maximum hospital benefits discharge, i.e. with the sanction of the therapists.

Of the 13 patients who left therapists, only three were picked up in therapy again. Of the patients whose first therapist left them, four had no continuation and five were continued in therapy. Table 15 indicates that the improved group has a larger ratio of therapists leaving patients.

TABLE 15

	Patient Left	Therapist Left
I	5	9
U	8	8

Since in this hospital most therapists are in training and change services or leave the hospital for other training installations, it is more in the nature of things for the therapist to leave the patient. Patients who respond to the involvement in psychotherapy by a "flight into health" or by acting out do not reach the point of lasting insight and tend to gain a reputation that deters further therapists from starting with them. A third situation, that we would like to study further, is the patient whom therapists cannot leave alone. Despite the repeated failures of previous therapists, this type of patient is able to attract a new therapist who may also bite the dust.

Subsequent Somatic Therapy

Some patients in this study received various forms of somatic therapy following the termination of psychotherapy. Nine or 50 per cent received no specific somatic therapy from the time psychotherapy was discontinued to the evaluation. Five (28%) received a tranquilizing medication, three EST and one CO_2.

If all subsequent somatic therapy is considered together (tranquilizing medication as well as "shock" therapies), of the nine patients who were so treated three were evaluated as improved. Thus, of the patients who were felt to require something additional to their psychotherapy, only one in three showed further improvement.

Summary

In this report, an attempt has been made to study certain factors apparently related to improvement from psychotherapy in disturbed patients. Subjects were selected from admissions to the acute disturbed service and include all patients during the period studied who were treated primarily by psychotherapy. Psychotherapy was defined as regular sessions, usually 45 to 60 minutes in length, at least two times weekly and lasting at least two months. The group was evaluated from record and personal knowledge. The evaluation of Improvement, though based on a mental status appraisal, was also found to be related to being out of a mental hospital at the cut-off date.

Those factors which show statistically significant differentiation of the Improved group include: 1. longer therapy, 2. higher military rank especially when compared to length of service, and 3. therapist unsupervised (related to greater experience).

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Intravenous Thiobarbiturates and Electroshock Therapy

(A Comparative Study)

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Intravenous thiobarbiturates are frequently used to modify the reaction of patients receiving electroshock therapy. Certain barbiturates may also be employed. A number of drugs belonging to both groups achieve the avoidance of postconvulsive excitement that is often associated with the treatment. While it is always desirable to have the patient regain consciousness quietly, it is imperative that this happen when treatments are given in an office setting. Which, then, of the various intravenous anesthetics is best suited for this purpose?

This study is concerned with the evaluation of six of these chemical agents. Four are discussed in detail, two others receiving briefer mention. These anesthetics are:

1. Thiopental sodium (Pentothal)
2. Thiamylal sodium (Surital)
3. Methitural sodium (Neraval)
4. Hexobarbital sodium (Evipal)
5. Pentobarbital sodium (Nembutal)
6. Amobarbital sodium (Amytal)

Each of these drugs may be relied upon to prevent the hyperkinetic manifestations of an early awakening from an electrically induced seizure. The first four mentioned have greatest claim for consideration as the anesthetic of choice; the latter two have certain limitations of usefulness. Among the first four, however, there are certain differences and it is the consideration of these differences with which this report is primarily concerned.

The comparison of these anesthetic agents is based on an experience extending over a period of eleven years. Approximately 35,000 drug-modified treatments were given. This obviously furnishes an ample background upon which to base the following observations. They are broadly considered under four headings:

I. Depth of Anesthesia

As mentioned above, all six anesthetic agents are capable of producing a depth of anesthesia that prevents postconvulsive excitement. The following table indicates the amount of the four main ones needed to produce this effect in the majority of patients treated:

Anesthetic	*Concentration*	*Amount*
Pentothal	2½%	6 cc
Surital	2½%	6 cc
Neraval	5%	6 cc
Evipal	5%	6 cc

Very rarely are smaller doses indicated. Greater amounts may be necessary occasionally in patients weighing over 200 pounds or those showing restlessness when given the usual dose.

II. Duration of Anesthesia

Postconvulsive excitement may start anywhere from one to five minutes after an unmodified seizure and generally lasts no longer than a few minutes. Hence the need for quick induction and short duration of anesthesia. This need is ideally supplied by the three intravenous thiobarbiturates, Pentothal, Surital and Neraval. One of the barbiturates, Evipal, acts like a thiobarbiturate in that it produces an anesthetic effect of short duration.

Patients given electroshock without an anesthetic awake in a few minutes. Those receiving intravenous thiobarbiturates usually remain unconscious for fifteen to thirty minutes.

When Nembutal or Amytal is used, patients sleep much longer. In those few cases in which I have given these drugs, patients did not awaken in less than an hour and some slept as long as two hours. In a practice largely devoted to office treatment it is obvious that this raises problems not encountered with shorter acting agents. The prolonged sleep afforded by these drugs is more than is needed to avoid postconvulsive excitement. For this reason I discontinued their use after a few trials.

III. Time of Elimination of Anesthetic Agent

Patients receiving unmodified electroshock are generally ready to leave the office in about half an hour. Naturally they are accompanied by a relative since they still show some confusional behavior. When any of the thiobarbiturates or Evipal is used with shock therapy, patients are ready to leave in about an hour.

With Nembutal or Amytal I have observed that it takes two to three hours before patients can walk steadily enough to leave the office. The rate of elimination of these drugs is, therefore, too slow to permit their use in office practice.

Recent claims have been made (1) that Neraval is more rapidly eliminated than any of the other thiobarbiturates and that this quicker recovery period is naturally advantageous in drug-modified electroshock therapy. My own experience with Neraval has indicated that:

When the drug is used alone, as in narcosynthesis, there is definitely a more rapid return to an unclouded state of consciousness.

When used to modify electroshock therapy there is very little difference between Neraval and the other thiobarbiturates. I have timed the length of stay at the office of patients who have been given all four ultrashort acting anesthetics and I found no significant difference.

IV. Respiratory Effects

1. Respiratory Depression

All thiobarbiturates and barbiturates are respiratory depressants. When treatment is preceded by an intravenous injection it is not uncommon to observe a prolongation of the convulsive apnea after the seizure has ended. This is encountered more frequently when a 10 cc. dose is used. But even with 6 cc. it often occurs. This respiratory depression is seen in equal frequency and intensity with any of the thiobarbiturates described in this report.

Prolonged apnea due to premedication with thiobarbiturates may be avoided by injecting the drug after the electroshock treatment is given. The patient almost always breathes promptly when the clonic phase of the convulsion has ended. The injection is then given at once and no further respiratory embarrassment ensues. While this is a desirable approach, there is one difficulty occasionally encountered in giving the injection after the treatment. Where veins are small and present a hindrance to rapid and certain entry, and when restless awakening starts in less than a minute after the seizure, one may occasionally be confronted with a problem of postshock excitement and injection is rendered even more difficult by the movements of the patient. Fortunately this is not too frequent.

2. Laryngospasm.

Varying degrees of laryngospasm may result from the injection of these anesthetics. In using the various thiobarbiturates, one may observe differences among them with regard to the frequency of this complication. Pentothal and Neraval definitely produce laryngospasm more often than Evipal or Surital.

In my experience, laryngospasm occurs most frequently with Neraval, less commonly with Pentothal, and only rarely with Surital or Evipal.

Other Considerations

One other difference remains to be reported. The three thiobarbiturates produce a more stable solution than may be obtained with Evipal. Properly refrigerated, the thiobarbiturate solutions remain clear for at least two days and may be used without fear of deterioration. Evipal must be freshly made and used within a few hours. On the following day the solution contains a precipitate that renders it unfit for use.

Discussion

What anesthetic is best suited in connection with electroshock treatment? Nembutal and Amytal may be excluded at once. They produce anesthesia that lasts too long and the recovery period is also prolonged. Neraval has the disadvantage of producing laryngospasm more often than the other drugs. Evipal solutions spoil too quickly.

That narrows the choice to Pentothal and Surital. Since I have had fewer instances of laryngospasm with the latter, I regard it

as the anesthetic of choice to be used with electroshock therapy.

Summary

Experience with six thiobarbiturates and barbiturates used to prevent postconvulsive excitement have been described. All are effective in preventing hyperkinesis following electroshock therapy. Nembutal and Amytal have the disadvantages of long duration of anesthesia and slow elimination of the drug. Pentothal, Surital, Neraval and Evipal produce the most satisfactory duration of anesthesia. When used to modify electroshock therapy, no significant difference among these four agents has been noted with regard to rapidity of elimination. Laryngospasm is more commonly encountered with Nerval and Pentothal than with Surital and Evipal.

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Hexobarbital Sodium in Clinical EEG

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Most authorities agree that EEG sleep records often provide useful information. Indeed, Gibbs[1] feels that a sleep record should be obtained in the course of each clinical EEG. Certainly most children under age five must be asleep in order to secure an EEG tracing as they are too young to understand and cooperate fully.

In the past, pentobarbital sodium was used in our laboratory to induce sleep but had several undesirable attributes, chief of which were:

1. High incidence of barbiturate forms in the tracing.
2. Hang-over effect coupled with a period of confusion going into and coming out of the sleep state.
3. Longer action which made it difficult to remove adult out-patients from the laboratory in order to send them home or back to the referring hospital.

A survey of the literature indicated that hexobarbital sodium, used orally or anally as an hypnotic, seemed to possess some qualities that might make it preferable to pentobarbital sodium in inducing sleep in EEG's. Studies conducted by Das[2] and Das and Reventos[3] indicated that hexobarbital sodium was cleared from the bloodstream rapidly. According to Bush, Butler and Dickinson[4] hexobarbital sodium metabolizes rapidly which would account for the short duration of action and the absence of after effects. Kennedy and Narayana[5] report that the drug is not fixed by the cells and, even in high concentration, easily washes out. Its slight affinity for the vital vegetative centers explains why the drug has a high therapeutic index and hence a low toxicity (MLD 50 is 280 mg/kg for the rat).

A series of 25 patients, ranging in ages from seven to 62 years, were examined using test re-test methodology. The first EEG's were administered without the use of drugs. Thirteen received pentobarbital sodium and the remaining twelve received hexobarbital sodium on being retested four to seven days later. On the occasion of the third test, four to seven days after the second test, the patients who had received pentobarbital sodium were given hexobarbital sodium and vice versa. Factors such as time of day, change in patient's condition, amount of food intake and fatigue were controlled as much as possible. During the first, drug-free, run only four of the 25 patients fell asleep during the test; none reached deep sleep. Using hexobarbital sodium, 20 patients fell asleep within 15 to 20 minutes and reached light to moderate stages of sleep. The five who did not sleep seemed to relax and showed rather clear, artifact-free records. Using pentobarbital sodium, 23 patients fell asleep within 20 to 30 minutes. Depth of sleep ranged from light to moderately deep. The two who did not sleep also relaxed but complained of feeling drugged later and were slightly ataxic on arising.

In the course of securing the 25 patients for test re-test basis, hexobarbital sodium was administered to an additional 75 patients who needed EEG's. Fourteen were children under five, seven were children between five and twelve, nine were between thirteen and eighteen and the rest, 45 in all, were adults. Of the 75, thirteen did not sleep on the initial dosage of the drug. Neither sex nor age appeared to determine susceptibility or lack of it to hexobarbital. Instead, emotional tension seemed to be the prime determinant in a patient's not succumbing to the drug.

In evaluating hexobarbital sodium on the basis of 100 clinical patients, 25 of whom were re-tested with (1) no drug, (2) pentobarbital sodium, (3) with hexobarbital sodium, we find that it possesses the following advantages:

1. It is quick acting; 15 to 20 minutes after administration, the average patient falls asleep.
2. It has a low hang-over effect. Adults are able to leave on their own power without difficulty. They do not complain of feeling drugged although two patients did complain of feeling a little fatigued and one complained of irritability.
3. Patients do not seem confused in going into and coming out of the sleep state.
4. There is a low incidence of barbiturate forms in the EEG tracing.
5. It can work effectively as a relaxant in getting clean EEG's on tense individuals.

However, it has some attributes that may constitute disadvantages:

1. It did not seem to work effectively in terms of inducing sleep in approximately 20 per cent of the cases tested.
2. If deep sleep observations were required, hexobarbitalsodium would not directly induce this depth of sleep. However, a study by Gruber and Keyser[6] suggests that administration of the drug anally might be more effective than oral administration for inducing deep sleep.

Another characteristic of hexobarbital which should be noted and which may or may not be of clinical significance is that transition from waking to light sleep is quite rapid with a lower incidence of sleep spindles. This characteristic may constitute either an advantage or disadvantage depending upon the purposes of the study in which it is used.

The dosages of hexobarbital sodium employed were four grains for children and eight grains for adults. An additional four grains may be necessary if patients are tense or disturbed. The dosages of pentobarbital sodium employed were three-quarter grains for children and one and one-half grains for adults. Hexobarbital sodium is a heavier molecule than pentobarbital sodium which accounts for the heavier weight of the drug needed to induce sleep. However, since it metabolizes rapidly and shows little affinity for the vital vegetative centers, the relationship between weight and toxicity does not seem to apply here.

Summary

Hexobarbital sodium was administered to 100 patients in performing clinical EEG's. Of these, 25 were compared using (1) no drug, then (2) with pentobarbital sodium. The results indicate that hexobarbital sodium possesses some attributes which make it the barbiturate of choice in obtaining sleep EEG's. These main attributes are:

1. Low incidence of barbiturate forms.
2. Low hang-over and confusion effects.

A disadvantage in its use is that approximately 20 per cent of the patients tested did not fall asleep on the initial dosage of the drug.

Authors' Note: The formula of hexobarbital sodium is sodium 5-(1-cyclobexenyl)-1, 5 dimethylbarbiturate. Applicable commercial names are: Hexatrol, Sombulex, Evipal.

The drug used in this study, Hexatrol, was generously supplied by R. E. Dwight and Company, Des Moines, Iowa.

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Correlation of Glucose Insulin Tolerance Test with Insulin Coma Therapy

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What is the dose of regular insulin which will produce coma in a schizophrenic patient? So far this cannot be predicted. We arrive at the optimal coma dose by various methods of gradually increasing doses until the patient is given the amount of regular insulin which produces coma. From one individual to another this varies widely, from as low as 40 units to more than 1000 units. Time and effort could be saved if some test could be devised which would give an approximation of the initial coma dose of insulin. The present study is an attempt to do this.

The reasons for the variation in coma dose of insulin are not fully understood. The group of patients roughly classified as "schizophrenic" undoubtedly will be regrouped as more is understood about the differences in carbohydrate metabolism, insulin sensitivity, and insulin resistance found in this mental illness.

A number of authors[1,3,4,6,7,8,9,10] have postulated that an anti-insulin factor in the blood of certain types of schizophrenics is responsible for the wide variation in insulin coma dose required to elicit a coma. As yet no method has been devised whereby one can know the extent of this anti-insulin factor, or its quantitative effect. Goldner and Ricketss[11] deny the existence of such an anti-insulin factor. Two types of schizophrenics —an insulin-sensitive and an insulin-resistant—can be identified, based on the responses to glucose tolerance and insulin sensitivity tests. We could find no report where these tests were of value in predicting the coma dose of insulin. According to Harris,[1] Kaplan and Low;[2] Borenz, Schuster and Downey,[5] the insulin sensitivity test bears no correlation to the dose of insulin required to produce coma during subsequent insulin shock treatment.

The fasting blood sugar of non-diabetic schizophrenics falls within the normal range[12,13] but about 60%, according to Meduna and his associates,[6] will show some abnormality of their carbohydrate metabolism and a decrease in insulin sensitivity. Interestingly, Mayer-Gross, et al.[24] have shown that lysergic acid diethylamide, a drug which has a remarkable psychological effect in very small oral doses, also has an effect on carbohydrate metabolism, resulting in an increased concentration of hexosemonophosphate in the blood.

Himsworth,[14,15] from 1936 to 1939, devised a test to separate patients with diabetes mellitus into insulin-sensitive and insulin-insensitive types. The insulin-insensitive type of diabetic he considered to have a lack of some unknown factor which in the normal subject produces sensitivity to insulin. He suggested that the insulin-sensitivity factor was an activator of insulin. Thus, to Himsworth, insulin resistance is equivalent to deficiency of the insulin-sensitizing factor.

In 1952, Lazarus and Volk,[16] published their study on a modified glucose insulin tolerance test which gave a uniform type of response in normal individuals and showed a correlation with the daily insulin requirements of diabetic patients. In their test a standard dose of glucose administered intravenously, was followed thirty minutes later by intravenous insulin. This method eliminates aberrations due (1) to differing rates of intestinal absorption of glucose, and (2) to the body mechanisms for hyperglycemia responsiveness which are stimulated by the administration of glucose and set in motion before the insulin is injected. Added insulin acts in conjunction with these mechanisms. If the postulated anti-insulin factor is stimulated in response to the patient's own insulin production when glucose is given, the question arises whether the subsequent injection of exogenous insulin will further stimulate production of anti-insulin factor. Thus we may be able to ascertain some relationship between effect of insulin given and insulin coma dose requirements.

Method

Twenty-two patients between the ages of 19 and 38, with diagnoses of various schizophrenic reactions, were selected for this study because the psychiatric staff had considered them good candidates for insulin coma therapy. There were 10 females and 12 males and the duration of illness was from a few months to four and one-half years, but all were considered in an acute phase of their illness. The patients were on a high carbohydrate diet adequate in protein and fat and all had been eating well. The tests were carried out after a 12-hour fast and the patients were lying comfortably in bed with one or two attendants present at all times. Prior to testing, the patients had been informed of what was to happen and had already begun to enter into group work activities with the other patients on insulin therapy. The morale of the group was excellent and the majority were cooperative. It is felt that fluctuating anxiety played little part in affecting test results.

A 5.0 cc. sample of venous blood was drawn for glucose determination and the patients were given intravenously ⅓ gram of glucose per kilogram of body weight as 50% solution in water. Thirty minutes later another blood sample was taken and 0.1 unit of crystalline insulin per kilogram of body weight was injected intravenously. Further venous blood samples were taken for glucose determinations at 60, 90, 120, 150 and 180 minutes after administration of glucose. The blood sugar determinations were done by the Folin Wu method modified for the Klett-Summerson colorimeter. It was felt that it was not necessary to determine true blood sugar because Borenz, Schuster and Downey[5] checked non-glucose reducing substances in schizophrenic patients and found close agreement with Somogyi's[17] original statement that the non-glucose reducing substance was uniform. They found that the non-glucose reducing substance in the blood of schizophrenic patients varied 18-27 mg. per cent and averaged 23 mg. per cent. The factor remained fairly constant regardless of the variations of the blood sugar following intravenous injection of glucose and of insulin. The results on the forty non-diabetic volunteers given the same test by Lazarus and Volk[16] were used as controls.

The patients were subsequently given full insulin coma therapy and the minimum coma dose determined. Therapy consisted of a total of from 24 to 51 hours of coma, each lasting up to an hour. Treatment was given five days a week. Coma was defined as that state in which the patient no longer responded to sound, sight, or pain, with a purposeful movement. Minimal coma dose was the smallest dose of regular insulin which could be counted on to produce coma in the patient on consecutive days. Four to eighteen days after cessation of treatment the glucose insulin tolerance test was repeated.

Results

The fasting blood sugar levels of the 22 patients ranged from 87 mg. to 122 mg. glucose per 100 ml. blood. The 30-minute blood specimens after the intravenous injection ⅓ gm. of glucose (as 50% glucose) per kilogram of body weight ranged from 126 mg. per cent to 230 mg. per cent. All but three of the patients had blood sugar levels 30 minutes after injection of insulin that were at, or below, their fasting blood sugar level. These three were within 9 mg. per cent of the fasting level. One-half of the patients showed a lower blood sugar 60 minutes after intravenous injection of insulin than they did 30 minutes after injection of insulin. This was not related to the insulin coma dose or to response to therapy.

The rate of decline of the blood sugar level was calculated for the 30 minute period after the injection of insulin. The rate of decline varied from 2.3 mg. per cent to 5.1 mg. per cent. This is similar to that found in the normals of Lazarus and Volk where the range was 2.4 mg. per cent to 5.7 mg. per cent.

However, the females with two exceptions had decline rates of 3.7 mg. per cent or higher and the males had decline rates of 3.9 mg. per cent or lower. In general, females have the higher rate of decline. Of the two female exceptions, the one with a decline rate of 2.8 mg. per cent had a 30-minute blood glucose level of only 138 mg. per cent. The other, with a decline rate of 2.7 mg. per cent showed a further drop in her glucose of 49 mg. per cent during the

next 30 minutes. This was unusually large for our series. Including these two females, the average rate of decline for the females was 4.0 mg. per cent per minute. The average rate of decline for males was 3.2 mg. per cent per minute.

Using Student's t this was found to be a significant difference.

$$t = (M_1 - M_2) \div \sqrt{\left(\frac{\Sigma \Delta_1^2 - \Sigma \Delta_2^2}{N_1 + N_2 - 2}\right)\left(\frac{1}{N_1} + \frac{1}{N_2}\right)}$$

Student's t=3.64. That this is due to chance is less than 1.0 per cent.

The time required for the blood sugar levels to return to normal fasting level after the decline below the fasting level with the intravenous injection of insulin varied from 2 hours to more than 3 hours. This was not correlated with minimum insulin coma dose or with response to therapy.

We were able to test 16 of the 22 after insulin coma therapy. Eight showed a significant change in their "sensitivity factor" but this was not correlated with response to therapy or the minimal insulin coma dose. Six showed decreased glucose tolerance after treatment but only two of these were among the eight patients who had shown decreased glucose tolerance prior to insulin coma therapy. Again the decline rates in females after therapy tended to be greater than the decline rate is males after therapy.

In response to therapy three females were classed as unimproved and seven improved; seven males unimproved and five males improved. Response to therapy in our series was better in the females and in general they had greater sensitivity to insulin as measured by the decline rate, but this sensitivity was not reflected in the minimal coma dose of insulin. The latter also bore no relation to body build or weight.

Discussion

Although Lazarus and Volk[16] were successful in finding a correlation between their "sensitivity factor" and the dose of insulin required to treat diabetes, we were unable to find a correlation between the "sensitivity factor" and the dose of insulin required to produce coma. This implies that the causes of insulin sensitivity and insulin insensitivity, or insulin resistance, in diabetes and schizophrenics are of different origin.

Meduna[6] et al. found the "carbohydrate metabolism hormone" of Hoffman to be normally present in blood serum of schizophrenic patients but they found a delayed utilization of blood sugar by these same schizophrenic patients and went on to demonstrate a specific anti-insulin factor in the blood of schizophrenics.

The "carbohydrate metabolism hormone" appears in the blood serum of normal subjects after ingestion of glucose and reduces the glycogen content of the liver of rats when injected subcutaneously. Meduna and his co-workers concluded that there is a disturbance in the carbohydrate metabolism of the schizophrenic patients characterized by a delayed utilization of blood sugar. This disturbance is not due to a lack of insulin because there is no tendency to a high blood sugar level. By injecting blood of normal and schizophrenic patients into rabbits and later giving insulin to the rabbits, they found that the blood of schizophrenic patients protected the rabbits from the effects of the insulin and therefore the blood of schizophrenic patients contained an anti-insulin factor.

This work was corroborated by Harris.[1] Braceland et al.[4] who pointed out that if resistance to insulin were the only deviation in the patients, they would have a decreased glucose tolerance and a high fasting blood sugar. The latter does not occur. A decreased capacity of the liver to handle large amounts of glucose given in the usual way be inferred, since the weight of the schizophrenic liver is said to be about 30% less than normal. These authors also favored an anti-insulin factor in the blood of schizophrenics. Meduna and Vaichulis,[4] in 1948, found a substance in the urine of so-called schizophrenics which rendered animals resistant to a subsequent dose of insulin. In 1952 Morgan and Pilgrim[10] traced this hyperglycemic factor from urine of schizophrenic patients and found it to be a protein or material bound thereto. Normal male urine did not contain a measurable quantity of the hyperglycemic factor. McCulloch et al.[9] after removal of adrenal, pituitary, gross damage to the ventral hypothalamus, section

of vagi, and thoraco-lumbar sympathetic outflow, in both the dog and cat, failed to prevent a rise in blood sugar induced by intrathecal adrenalin. They postulate that some part of the brain not destroyed by them serves as a gland of internal secretion to produce this unknown hyperglycemic factor.

Meduna,[8,9] reported that 2/3 of so-called schizophrenics, on their first admission gave a diabetic response to the Exton-Rose (one-hour, two dose) glucose tolerance test, showed a resistance to insulin, and clinically had a primary clouding of the sensorium. These patients respond well to treatment by anoxia, Dauerschlaf, insulin, metrazol, and electric shock. He termed these patients oneirophrenics. Of our cases only two fit these criteria biochemically and only one of these improved with insulin coma therapy. Oneirophrenics are said to respond well to electroshock therapy. Of the 22 patients 19 had ECT following admission to the hospital, either without improvement or without sustained improvement. One had ECT prior to transfer here from a local Veterans' Administration Hospital. Thus oneirophrenics may have been removed from our group prior to the selection of the group and we are dealing with schizophrenic reactions in the true sense of the word, i.e., Bleuler's definition, no clouding of the sensorium. It is interesting to note that even in this group there is considerable disturbance in carbohydrate metabolism and an anti-insulin factor is probably present in some of the patients. Meduna and McCulloch[9] report that oneirophrenia responds well to various forms of shock treatment, may recover spontaneously or terminate as classical dementia praecox. There cannot be a true division by time intervals into stages because some of our patients have had an illness of extremely short duration which was not correlated with abnormal carbohydrate metabolism. We may be dealing with more than one or two types of mental illness, which show various disturbances in carbohydrate metabolism.

Gellhorn and Kessler[25,26] showed that electrically induced convulsions excite the sympatheticoadrenal and vagoinsulin systems in the unanesthetized rat and it is the excitation of the sympatheticoadrenal system which causes hyperglycemia. The blood of medical students who were made anxious in an examination was injected into animals and it produced hyperglycemia due to the increased adrenalin. However, the blood from excited psychotic patients, exclusive of manics, caused hypoglycemia and death in the animals, perhaps due to a lot of circulating insulin. The schizophrenic patients in the present study may already have increased circulating insulin and this accounts for part of the variability in response we observed in our study.

Altschule[19] considers the insulin resistance to be consistent with increased adrenocortical or anterior pituitary activity which is lessened in the remission of the psychosis. Among the changes in a recent psychosis suggesting adrenocortical hyperactivity are the impaired glucose tolerance and insulin resistance. He feels there is no conclusive evidence to indicate whether the changes found are due to hyperactivity of the adrenal cortex per se or to a change in reactivity of enzyme systems in peripheral tissues that are controlled by adrenocortical hormones; in other words, whether the changes are the cause or the effect of the psychosis. Hoskins and Jellinek[20] and Looney and Cameron[21] favored a change in the sympathetic-adrenal mechanism as being responsible for the improved clinical status of patients under insulin treatment. The other possibility suggested was that some change in the pituitary had taken place. In 1940, Angyal et al.[22] pointed out the rather general reduction of physiologic responsiveness that is found in schizophrenia and asked for synthesis of factors from the organic, psychologic and social disciplines concerned with the genesis and perpetuation of schizophrenia. Hoskins and Sleeper[23] in 1933 had mentioned that, as regards homeostasis, schizophrenia is characterized by two deviations from normality—the ability to maintain a "steady state" is diminished and some functions are basically displaced upwards, others in a downward direction.

The response of our patients in this series eloquently echo this early statement. It may be that physiologically we can better classify that large group of patients called schizophrenias but as yet the tests to do this are not all at hand.

TABLE I

			Pre-Treatment — Glucose Insulin Tolerance Test					Post-Treatment — Glucose Insulin Tolerance Test			
Patient	Sex	Response to Therapy	Minimal Coma Dose-Insulin	Glucose Level 30 Minutes	Rate of Fall of Glucose on GTT 30-60 Minutes mg/min.	Sensitivity Factor	Time for Blood Sugar to Return to Fasting Level Hours	Glucose Level 30 Minutes	Rate of Decline	Sensitivity Factor	Time for Blood Sugar to Return to Fasting Level Hours
AH	F	Unimproved	90	174	2.7	64	3 +	226	4.1	55	2.5
AT	F	Improved	120	138	2.8	60	3 +	158	0.4		3
RS	M	Improved	170	177 (152)	2.8	42 (53)	2.5	170	3.3	52	2.5
VM	M	Unimproved	50	190	3.0	63	3 +	184	2.4	77	3 +
CM	M	Unimproved	120	126	3.0	42	3 +	148	3.3	45	3
TG	M	Improved	200	140	3.0	47	2.75	162	3.6	45	3 +
NK	M	Unimproved	180	186	3.1	60	3 +				
RI	M	Unimproved	190	138	3.1	44	3	148	3.3	45	2 5
AS	M	Improved	290	172	3.1	55	2.75				
FB	M	Unimproved	200	142	3.3	43	2				
WM	M	Improved	230	184	3.3	56	3	223	4.2	53	3 +
WD	M	Unimproved	210	158	3.5	45	2.5				
DL	M	Unimproved	130	230	3.7	62	3 +				
RK	F	Unimproved	220	205	3.7	55	3 +	276	3.8	73	2.5
ML	F	Improved	150	168	3.9	43	3 +	166	3.8	44	3 +
WL	M	Improved	280	198	3.9	51	3 +	189	2.9	65	3 +
GP	F	Improved	180	195	4.1	48	3 +	204	4.7	43	3 +
VN	F	Improved	110	178	4.2	45	3	246	5.6	44	3 +
FE	F	Improved	210	185	4.3	43	3 +				
SD	F	Improved	130	171	4.4	39	2.75	250	4.2	60	3 +
DN	F	Unimproved	180	195	4.7	42	3 +	194	3.3	57	3 +
SL	F	Improved	310	222	5.1	44	3 +	189	3.6	53	3 +

TABLE II

Patient	Age	Sex	Schizophrenia Diagnosis	Duration of Illness	No. of ECT Treatments	Insulin Coma Hrs.	Minimal Coma Dose	Response to Therapy
AT	33	F	Paranoid	3 years	25	24	120	Improved
AH	32	F	Affective	1 year	50	49	90	Unimproved
RS	27	M	Paranoid	1½ years	20	50	170	Improved
VM	31	M	Undiff.	1 year	17	34	50	Unimproved
CM	20	M	Paranoid	3 years	15	50	120	Unimproved
TG	20	M	Paranoid	1 year	0	36	200	Improved
NK	30	M	Paranoid	4½ years	15 plus at Crile	26	180	Unimproved
RI	26	M	Paranoid	1½ years	15	51	190	Unimproved
AS	24	M	Chronic undiff.	3 years	0	50	290	Fair
FB	25	M	Mixed	6 months	20	30	200	Fair
WM	35	M	Catatonic	2 days (7 years ago)	27	50	230	Improved
WD	32	M	Paranoid	6 months	11	49	210	Unimproved
DL	27	M	Paranoid	6 months	0	49	130	Unimproved
RK	33	F	Paranoid	1 year	15	40	220	Unimproved
ML	24	F	Affective	4 months	10	52	150	Improved
GP	33	F	Paranoid	2½ months	20	50	180	Improved
VN	23	F	Paranoid	1 year	15	50	110	Improved
FE	28	F	Undiff.	6 months	0	50	210	Improved
SD	19	F	Catatonic	1 1/3 years	10	51	130	Improved
DN	27	F	Catatonic	1½ years	31	36	180	Unimproved
SL	25	F	Catatonic	4 months	33	51	310	Improved

TABLE III

Rate of Decline of Blood Sugar During 30 Minute Period After Injection of Insulin

Calculated by Dividing the Difference in Glucose Levels at 30 Minutes and 60 Minutes by the 30 Minutes.

FEMALES

Pt.	30 min. level	60 min. level	Decline	Rate of Decline mg/min.
AH	174	94	80	2.7
AT	138	53	85	2.8
RK	205	95	110	3.7
ML	168	52	116	3.9
GP	195	72	123	4.1
VM	178	51	127	4.2
FE	185	56	129	4.3
SD	171	40	131	4.4
DN	195	55	140	4.7
SL	222	68	154	5.1

Average rate of decline=3.99 mg/min.
=4.0 mg/min.

MALES

Pt.	30 min. level	60 min. level	Decline	Rate of Decline mg/min.
RS	117	33	84	2.8
VM	190	75	115	3.0
CM	126	36	90	3.0
TG	140	50	90	3.0
NK	186	84	92	3.1
RI	138	42	96	3.2
AS	172	79	93	3.1
FB	142	42	100	3.3
WM	184	84	100	3.3
WD	158	54	104	3.5
DL	230	120	110	3.7
WL	198	82	116	3.9

Average rate of decline=3.24 mg/min.
=3.2 mg/min.

Student t=3.64

This is significant—Chance this is due to chance is less than 1%.

Summary and Conclusion

1. Schizophrenic patients (22) between the ages of 19 and 38, with illnesses of short duration, most of whom had failed to respond to electrocoma therapy, were tested with an intravenous glucose insulin tolerance test before insulin coma therapy.

2. The females in the series showed a more rapid rate of decline of blood glucose in the 30 minutes after intravenous administration of insulin in the glucose insulin tolerance test, than did the males.

3. More females than males responded favorably to insulin coma therapy.

4. No direct correlation between results of the glucose insulin tolerance test, minimal coma dose of insulin, and response to therapy, could be found.

5. Repetition of the glucose insulin tolerance test after insulin coma therapy showed wide variation in response compared to the pretreatment results but the females still showed a more rapid rate of decline of blood glucose in the 30 minutes after insulin injection.

6. The finding that the carbohydrate metabolism and insulin sensitivity in some schizophrenic patients differs from the normal is confirmed.

7. The causes of insulin sensitivity and insulin insensitivity or insulin resistance, in diabetes and schizophrenics are of different origin.

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Cigarette Neurotics

EDMUND BERGLER, M.D.

Neurotics are brilliant at picking up new leads for their old fears. The neurosis remains static; the point of deposition and means of expression do the changing. A colleague once told me that the first laymen to believe in micro-organisms, when they were discovered in the last decades of the last century, were neurotics who seized on this opportunity to develop a "new" fear of bacteria and bacilli.

The recent cancer scare concerning the connection between smoking and neoplasms of the lungs was misused in the same way by hypochondriacs. Obviously, even non-neurotics were given pause by a medical problem they could not check, since conflicting reports were published in the press and magazines. Medical guidance was lacking simply because medical men disagreed among themselves.

Reasonable people had to make a decision on the basis of unknown and uncheckable facts. They could credit these reports in toto and stop smoking, or discredit the reports and merrily continue to smoke. Many solved the problem in exactly the latter way. Which decision was correct—that of abstaining or continuing—is of course a moot question. In any case, whatever conclusion these people drew was accompanied by a certain amount of equanimity; they did not exactly misuse the problem for neurotic purposes.

The new group of "cigarette neurotics" neither stopped smoking nor calmly continue to smoke. Their "solution" consisted of "fearful smoking": every puff they took from a cigarette was loaded with the fear of inducing cancer of the lungs. In short, they *acquired a new masochistic deposit for inner fears stemming from other sources.*

In this turmoil of fears, cigar- and pipe-smokers regarded their frightened tobacco-brethren with irony: cigar and pipe addicts were threatened "only" with "old" dangers —cancer of the lip or throat. And when cigarette-smokers bitterly accused them of detachment in the controversy ("To smoke or not to smoke," the new version of Hamlet's query), they went on laughing.

"Cigarette neurotics" are as plentiful as hypochondriacs. These unfortunates are by no means laughable; they suffer from a se-

vere neurosis. In all these people, the neurotic pattern of psychic masochism is deeply ingrained. Psychic masochists unconsciously devote most of their psychic energy to transforming conscious unhappiness into unconscious pleasure; perpetually, they play the game of putting their heads into the lion's mouth, and then waiting to see whether the lion will yawn, putting the head aside or really bite.

Hypochondria is a variety of torture for which the prerequisite is a considerable amount of free-floating psychic masochism. In later stages, the free-floating masochism is localized on a temporary basis and attached to a specific organ of the body. Medically, hypochondriacal fear per se is distinct from psychosomatic ailment in which the victim meets his sickness more than halfway.

Today everybody accepts the fact that the body influences the mind and the mind the body. Practically any symptom can be imitated thus, by hysterical conversion. Freud first elucidated this principle more than half a century ago. It is of course understood that at a certain point the unconscious game becomes unhappy reality. Hypochondriacs are sick people, although their illness is not the one they suspect or complain of. The hypochondriac can choose to make any part of his body into the disturbing agent; the organ elevated into prominence becomes the active torturer and the individual himself becomes the willing (because masochistic) victim. The choice of a specific organ develops through three unconscious stages: organ promiscuity, symbolic meaning, lasting attachment to a specific part of the body.

In the first stage, that of organ promiscuity, the individual indiscriminately fears for the health of first one part of the body and then another. His inner readiness to fear is constant; the focus of that fear constantly changes. What he has seen, read or heard during the day gives his fear direction. He finds in himself, immediately, symptoms of any disease that has been brought to his attention. Symbolic meaning, which varies in each person and accords with that person's specific unconscious elaborations, points to a specific inner conflict that has been repressed, shifted and dramatized. The basic conflict can be clarified in individual treatment. The final stage in hypochondria is stabilization on one favorite "invalid" organ. This permanent attachment is only occasionally interrupted, for a time, by a foray into organ promiscuity. A retreat back to the standard complaint follows quickly.

These people are like the traditional sailor who has a girl in every port, but only one shrewish wife at home—a wife who tortures him soundly. Modern medicine takes the hypochondriac seriously; it has entirely abandoned the once acceptable approach of "cure by ridicule" and "cure by persuasion." Today the hypochondriac is acknowledged to be a neurotic personality in need of psychiatric help. The old jokes about imaginary diseases persist only in dimly-illuminated corners of the non-medical contemporary environment.

All hypochondriacs unconsciously act as if the trouble-causing organ were not their own, but an interloper that has managed, by trickery, to gain a foothold in the body. At bottom, they blame their parents for the trick. This characteristic attribution explains the entire psychic structure of their neurosis: Hypochondriacs choose a specific organ as villain and dictator, and make themselves into helpless serfs, completely at the mercy of the inner dictator. The whole process is unconscious. It is incomprehensible without knowledge of the psychic masochistic substructure.

"Cigarette neurotics" do not constitute a new disease entity. They are a subgroup of the great army of hypochondriacs. The new label is merely pasted over the old, the diseased personality structure of the hypochondriac. The familiar French saying is applicable: "Plus ca change, plus c'est la meme chose." The more the labels change, the more it's the same story. The only new element introduced into the controversy is the surprising amount of hypochondriacs populating the land.

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Effect of Intravenous Promazine on Arousal Responses in Man

W. P. WILSON, M.D., and JAMES S. GLOTFELTY, M.D.

Introduction

The effects of the phenothiazine derivatives on behavior in psychiatric patients have been extensively reported in the recent literature. The rather striking differences in the behavioral changes produced by these drugs, when compared to those produced by other drugs has lead to their rapid adoption as medications of choice in many psychiatric diseases. Because of these reports, neurophysiologists have become interested in their mode of action and through their investigations which have demonstrated a somewhat selective depressant action on the reticular system. This work has been adequately reviewed by Courvoisier.[1]

Recently Szatmari[2] in a report of the effects of chlorpromazine on the EEG in man, concluded that the regularization of the alpha activity with a slight decrease in alpha frequency was evidence of depression of reticular system activity. Shagass[3] in an earlier though less extensive study had reported the same finding. Although these studies indirectly point to a depression of reticular system activity in man changes in arousal responses might add further evidence to support this view.

The recent investigation of Moruzzi and Magoun,[4] Jasper[5] and others[6] have demonstrated the effects of light, sound, and nociceptive stimuli on reticular system activity as manifested by arousal responses in the EEG. It would therefore seem reasonable to assume that changes in these responses might more clearly demonstrate a change in the level of activity of this system.

In a preliminary report[7] we outlined the effect of orally administered tranquilizing drugs on arousal responses in man and the effects of non-soporific parenteral doses on these responses in a limited number of patients. This study is an extension of our preliminary studies on parenterally administered promazine.

From the Psychiatric Service, Veterans Administration Hospital, Durham, North Carolina.

Method

Twelve physically normal adult male subjects were selected for this study from the psychiatric service of the Veterans Administration Hospital, Durham, N. C. Only those subjects with normal control records and whose responses to stimuli were quite evident were used. Diagnoses were as follows: 5 patients had anxiety reactions; 5, psychotic depressive reactions; 1, delirium tremens; and 1, manic-depressive psychosis, manic type. The patients were prepared using standard electrode placements as described by Jasper.[8] Felted silver-silver chloride electrodes were used. Photic responses were elicited using single or double flashes of constant intensity from photic stimulator. The sound responses were elicited by a sharp clap and nociceptive responses by a sharp pin prick to the forearm. All stimuli were administered approximately every 10 to 15 seconds, usually to a total of 15 to 20 stimuli of each modality.

Promazine was administered intravenously in doses of 50, 75 and 100 mg. diluted to 10 cc. in normal saline. In all cases a control record was obtained before the drug was given. Ten to 15 minutes was then allowed to elapse and the effect of the drug on the subject was obvious clinically. The stimuli were then presented a second time.

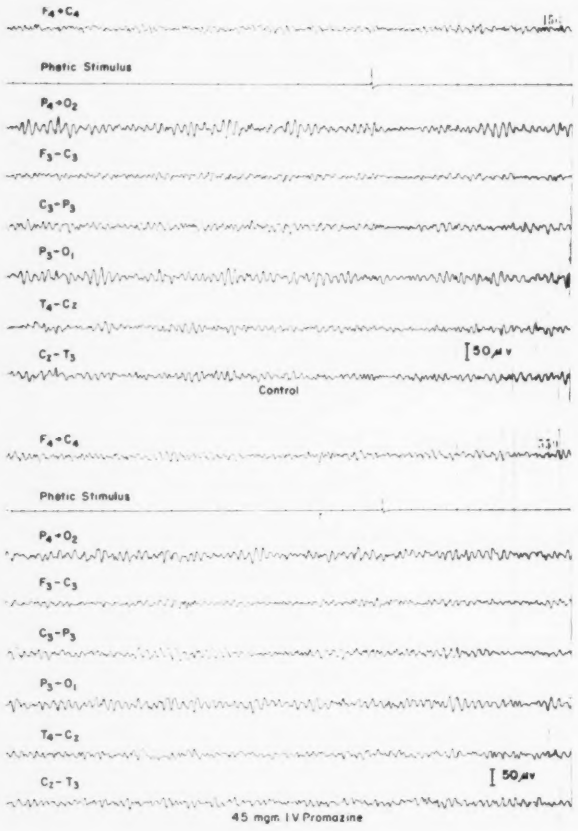
The EEG recordings were carefully examined in their entirety for (1) changes in muscle tension artefact, (2) changes in frequency in duration and intensity of arousal responses. Special attention was given to the early responses since as Loomis, Harvey and Hobart[9] have pointed out subjects adapt quickly to the stimuli.

In the analysis of the records it was found that responses to auditory and nociceptive stimuli, as administered, were too erratic for analysis so that only light responses were included in the final analysis of the data.

Results

The results of this study demonstrate, in contrast to our previous findings with orally

administered phenothiazine drugs,[7] a marked effect on reticular system activity as evidenced in the EEG. This is manifested by reduction of muscle tension artefact, a regularization of the alpha activity and a reduction or abolition of arousal responses to photic stimulation (fig. 1 and 2). In all 12 cases this was clearly demonstrated by a 50 to 100 per cent reduction in duration of all responses and a much more rapid adaptation to the stimulus if responses were seen following the administration of the drug. As well, fast activity at 20 to 25 cps characteristic of barbiturate activity was not seen in the records.



Previous observations as to undesirable side effects of promazine, minimized the occurrence of symptoms following parenteral administration. In this series, six patients reported tachycardia, sweating, pounding headaches, and on three occasions increases in blood pressure were observed.

Discussion

The remarkable clinical effects of the phenothiazine derivatives as manifested by changes in behavior are decidedly different from those induced by barbiturate medication. It would therefore seem likely that the mode of action of the two groups of drugs would be different. This seems to be borne out by this study and previous studies. The marked diminution in responsiveness to light stimuli is evident not only electroencephalographically but also clinically. One patient who had marked arousal responses to all stimuli, associated these with exploding artillery fire which had precipitated the chronic anxiety reaction responsible for his presence in the hospital. These stimuli evoked noticeable anxiety in the patient. Following the administration of promazine, the patient felt no anxiety and was not at all disturbed by the stimuli. This was accompanied by a marked reduction in both duration and amplitude of the arousal responses. Although the same findings in regard to photic responses might be expected from the administration of barbiturates, the preservation of normal cerebral rhythms and the absence of fast activity would indicate a depressing effect upon the reticular system with less cortical depression by the promazine. This might, for the most part, explain the increased clinical effectiveness of the phenothiazine derivatives in reducing tension and anxiety without producing the undesirable depression which is so common with barbiturate medication.

Summary and Conclusions

1. Intravenous promazine exhibits a marked depressant effect upon reticular system activity in man. This is clearly demonstrated by a reduction of muscle tension, regularization of alpha activity and a reduction or abolition of arousal responses to photic stimulation.

2. Clinical anxiety resulting from the stimuli in two patients was reduced.

3. Previous observations as to the effect of phenothiazine derivatives on the EEG are confirmed and extended by this study.

4. Unpleasant side effects resulting from the intravenous administration of promazine are reported.

Authors' Note: The promazine used in this study was generously furnished by the Wyeth Laboratories, Inc., Philadelphia, Pa.

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High Dosage Compazine in Chronic Schizophrenia

W. T. HOLMAN, M.D.

Compazine (prochlorperazine) was first used in psychotics in this country in 1955. Four separate investigators—Freyhan, Denber, Goldman, and Kline, initiated its use in hospitalized psychotics requiring high doses. The number of cases in this study (30) is small compared to the series of the aforementioned investigators, but the results and the fact that the patients studied represent a carefully selected group may contribute to a current evaluation of this phrenotropic drug.

Chemically, Compazine is a phenothiazine derivative, similar in structure and pharmacologic action to chlorpromazine. As an ataractic agent, it is approximately five times more potent than chlorpromazine, and clinical experience indicates that it is accompanied by fewer side effects. No cases of agranulocytosis or hepatic damage attributable to Compazine have been reported. Compared to promazine and chlorpromazine, it is more rapid in its tranquilizing action.

The 30 cases of this study are all schizophrenics who had not responded to various combinations of the following: electroconvulsive therapy, insulin coma, chlorpromazine, promazine, reserpine, mepazine, and lobotomy. The duration of illness varied from 3 to 20 years, with an average of 8.3 years. They were on closed wards and showed signs of deterioration. When transferred to the Benton Unit of the Arkansas State Hospital, custodial care appeared to be their last resort. It is significant to point out that, during the study, these patients did not have the benefit of the conventional therapeutic adjuncts such as occupational therapy, recreation, and psychotherapy. Recently, however, much improvement in Arkansas's state hospitals has come about, following an increase in appropriations by the state legislature.

From Arkansas State Hospital, Benton, Ark.

Method

In this study the initial dose of Compazine was 25 mgm. t.i.d., with the dosage being gradually increased every few days until improvement occurred or until extrapyramidal signs occurred. Extrapyramidal signs, perhaps the most common side effect of Compazine, occurred in 50 per cent of cases. The syndrome varied in severity from mild tremor of the facial muscles and shoulder girdle to classical parkinsonism. However, this side effect was not considered an indication for reduction of dosage, as it was readily controlled by empirical doses of Artane. Further, some investigators (particularly D. Goldman, Cincinnati, Ohio) feel that extrapyramidal signs from Compazine indicate high therapeutic activity. The response in our series of cases supports this view.

The daily dose of Compazine in this study ranged from 150 mgm. to 600 mgm., with an average of 200 mgm. during the first three months. Afterward, the dosage was grad-

ually reduced, according to the response. Extrapyramidal signs occurred in 50 per cent of cases at an average dose of 150 mgm. daily. No doubt the high incidence of extrapyramidal signs in this study is due to the fact that the initial dosage of 75 mgm. daily is considerably higher than that usually recommended.

Hemograms failed to reveal any evidence of agranulocytosis. No evidence of hepatic damage was encountered. No hypotension was observed. Drowsiness was not a problem. Skin reaction and photosensitivity occurred in four cases. Two of these cases manifested mild angioneurotic edema which promptly subsided upon reduction of dosage. In the other two, who developed a severe rash involving the face, Compazine was discontinued. Hyperkinetic symptoms, or "turbulence," as reported by Goldman, was observed in 12 patients but was transient.

Results

Re-evaluation at the end of three months of therapy revealed 17 out of the 30 cases in remission. Criteria for remission were: orientation, absence of hallucinations, at least apparent absence of delusions, insight, ability to socialize, and motivation toward return to life outside the hospital. Remissions occurred in five of seven undifferentiated schizophrenics, five of ten catatonics, six of 11 paranoids; remission did not occur in either of the two hebephrenics studied. The cases that are not in remission have shown much improvement; the majority of them are enjoying ground privileges for the first time since they entered the hospital.

The majority of the patients in this series are under 40 years; 17 are females; 13, males. The series included only one Negro patient.

Eleven patients have been discharged from the hospital, some during the past six months. They are seen monthly as outpatients. Some of them are gainfully employed. The other six patients in whom remission occurred remain in the hospital simply because they have nobody to sign them out. Some have relatives who gave them up as "hopeless" years ago and refuse to accept the fact that they are well enough to be discharged. Various other factors, such as finances, etc., complicate the picture. In these cases, the hospital is making an effort to discharge them through a vocational rehabilitation program.

Summary

Thirty cases of chronic schizophrenia, who had not responded to other methods of treatment, were treated with relatively high doses of Compazine, without benefit of conventional adjunctive therapy, with remission being achieved in 17 of the 30 (56.6%) after three months. No serious side effects were encountered. Although extrapyramidal signs occurred they were readily controlled with adjunctive Artane; and it did not necessitate reduction of dosage of Compazine. Further, this study supports Goldman's opinion that extrapyramidal signs from phenothiazine derivatives indicate high therapeutic activity.

The antiemetic action of Compazine necessitates close observation of patients receiving high doses, as it may mask intestinal obstruction or brain tumor. Although no clinical evidence has been reported, the frequency of extrapyramidal signs occurring with Compazine therapy raises the question as to its contraindication in lesions of the basal ganglia.

This study indicates advantages of Compazine over other phrenotropic drugs in the treatment of chronic schizophrenia. The results reported are encouraging; but like any other therapeutic agent, Compazine must stand the test of time.

Author's Note: Compazine used in this study was supplied by Smith Kline and French Laboratories, Philadelphia, Pa

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Book Reviews

THE QUEST FOR IDENTITY: Allen Wheelis, M.D. Pp. 250. Cloth. $3.95. W. W. Norton & Company, Inc., 55 Fifth Avenue, New York, N. Y., 1958.

The book represents a philosophical treatise written by a well grounded psychiatrist whose essay on man in this century concerns itself with man's changing pattern and his search through psychoanalysis for a new recognition of his state of being. The author develops in admirable style, the advent of approaching elimination of the stigma of the need for secrecy and points to the dictum of our present culture, which, in essence is not to enforce suppression but rather to seek help which regarded presently via psychiatric treatment, is esteemingly looked upon as the royal road to recovery. The author queries adroitly: recover from what—loneliness, insecurity, indecision, boredom, restlessness or discontent? As the social attitude toward neurosis has changed, the patterns of the neuroses have themselves undergone an equal change in both character and circumstance. Suggestion is rightly made that this concept is in keeping with the experience of the older psychoanalysts in that the description of the neuroses as well as the problems presented thereby, demonstrates that the present day patient population reflects in essence a metamorphosis from symptom neuroses to character disorders.

Symptom neuroses were recognized and accepted to convey a breakthrough in distorted fashion, of a previously repressed impulse appearing as a phobia, obsession, compulsion, or as a physical symptom, without physical cause, characterized by definiteness or suddenness of onset and occurring in a relatively well-integrated personality. Having the quality of a syndrome, it was diagnosed without difficulty and had the classical indication for rather abbreviated and affective psychoanalysis; and as such case material, this was considered ideal for teaching purposes. Contrasted, however, the frequently encountered character disorder of the present day, cannot be equally recognized as the resultant of a previously repressed impulse, because the character distortion is apt to loom larger and to be more troublesome than the erupting impulse. Nor is the conflict likely to reflect specific symptoms having the syndromic quality, but rather the vague and unorganized quality permeating the total personality. The symptomatic picture relates itself to such general complaints as difficulties in interpersonal association, unhappiness, self-commisseration or rigidness. Nowadays, the patient who senses any condition of cheerlessness, considers it as a conflict indicative of his life's difficulties and regards it as a reason for psychiatric consultation. Resultantly, diagnosis becomes more difficult and case reports conclude with formulations of considerable and complex lengths. The analyst of to-day has become accustomed to lesser attestations in respect of the areas of "cure" and inversely to a greater number of pronouncements in but the areas of "progress." Both patient and analyst must settle for less than the hoped-for ultimate aim and for longer lasting periods of analyses to boot.

In the opinion of the reviewer it would not be extravagant to say that the book presents in literary and interesting style, a mature examination and judicious psychiatric evaluation of the relevance of psychoanalysis and its applicability to the ailments of our times.

Lewis J. Siegal, M.D., LL.B.

PHYSICAL METHODS IN PHYSIOLOGY by W. T. Catton, M.Sc. Philosophical Library, N. Y. 378 pp. $10.00.

For any of our colleagues minded to review the wide variety of physical techniques and the theories which underlie physiological investigation, this would be a compact and, by the same token, an expensive little review.

There is no doubt about the quality of this work. It presents a part of the important, but to many of us nebulous, world of biophysics. Its main concern deals, however, with the important physical methods and treatment of physiological phenomena. Its value for the neurologist would be in its excellent treatment of muscle and peripheral nerves. Its value for the broader aspects of neuropsychiatry is lessened by the omission of discussions of electroencephalography, special sense physiology, and biochemical phenomena. Admittedly, other volumes cover these subjects in detail and the author felt that their inclusion would be too ambitious a project for him to undertake. The advantage of the book is its compact and convenient format. It is unfortunate that publishing and monetary regulations have conspired to make the price so high.

Francis J. Braceland, M.D., Sc.D.

AN INTRODUCTION TO PSYCHOPATHOLOGY by D. Russell Davis. Oxford University Press.

The author of this work, a psychiatrist, decided early to compensate for "a serious deficiency in my training" by working in a psychological laboratory. He was fortunate in having the opportunity to work under Sir Frederick Bartlett and to come under the influence of the late J. T. McCurdy, whom he later succeeded as a Lecturer in Psychopathology. His lectures form the core of this book.

The work is eclectic, if one may use that word which is so often regarded with suspicion. It is eclectic, as should all works of its type be, unless one is riding a hobby, endorsing a product, or hopelessly determined as a devotee. It is fair, it is explanatory, it is broad, and it is comprehensive and comprehensible. It starts in the beginning with the definition of psychopathology and ends with a chapter on Methods of Psychotherapy.

The orientation of the volume, as one would expect, is psychological. By means of it the author

hopes to "build a bridge between the psychiatric clinic and the psychological laboratories. Opinions may differ as to whether he has accomplished this end, and undoubtedly there will be differences of opinion regarding many of his statements, but the fact remains that he has written a readable work which can be of service to many psychologists and psychiatrists alike.

Francis J. Braceland, M.D., Sc.D.

DEAFNESS, MUTISM AND MENTAL DEFICIENCY IN CHILDREN by Louis Minski, M.D., F.R.C.P., D.P.M. Philosophical Library, Inc., 15 E. 40th St., New York, N. Y., 1957. $3.75. 80 pp.

In this book Dr. Minski reports on three and a half years of work done in England on the problem of making the differential diagnosis between mental deficiency and those children who are deaf and maladjusted or have no speech and are not deaf. Work was carried out initially in an experimental research unit at Belmont Hospital and led to making that a permanent unit, and also resulted in establishing a second unit at Sutton, Surrey, for the treatment of emotional disturbed deaf children. The book is designed for psychiatrists, pediatricians, otolaryngologists, neurologists, psychologists and speech therapists. The author points out that because of the complexities of the differential diagnosis, special testing procedures were devised to evaluate and diagnose deafness in children, which, if overlooked, could result in a diagnosis of mental deficiency since the deafness could produce a clinical picture resembling mental deficiency. He further shows that once this differentiation is made, special treatment and training procedures can be instituted to benefit the child with deafness. These children are capable of learning, but, by reason of the deafness, appeared permanently incapable of instruction by ordinary procedures. In this work it was also necessary to differentiate the child with severe emotional disorder, but who are not actually deaf or mentally defective, but yet may show mutism as part of their clinical picture. These may respond to psychological treatment. He points out that unless this differential diagnosis is made, some children will be considered to be mentally defective and relegated to a lifetime in an institution for mental deficiency.

The bulk of the book is devoted to a rather detailed and somewhat technical description of the methods devised for assessment, including audiometry, electropsychological methods, and psychological test procedures which he elaborates and illustrates.

The book is well written with a wealth of pertinent material condensed into a relatively short, easily readable text on a subject which deserves wider attention. The author advocates and pioneers diagnostic work and attention to a special group of children challenging others to continue the work. It is unfortunate that, at a time when other equally energetic workers are seeking ways to help the child with mental deficiency, the author implies that nothing can be done for the mental defective. It is doubtful that this implication was intended.

Robert S. McKnight, M.D.

THE NEUROSES AND THEIR TREATMENT, edited by Edward Podolsky, M.D. Philosophical Library, New York.

This book presents a collection of some forty papers embracing various aspects of the neuroses and their treatment. The range of topics is wide and includes an unusually large section on neurotic problems in infancy and childhood. Included also are a number of descriptive papers on adult neurotic and psychosomatic topics. In the latter part of the book, the authors discuss such divergent phenomena as abreaction, psychotherapy, tranquilizers, carbon dioxide therapy, and other therapeutic techniques.

The major problem which every editor faces is one of selection. This is particularly true where the material itself is incorporated in unaltered form. As the editor himself observes in the Introduction, uniformity is impossible and stylistic discrepancies are inevitable. Even more important in a book of this kind, there is danger of a fuzziness of orientation and a confusion of the trivial with the important.

A number of papers, particularly in the forward part of this book, would repay reading by the resident in training. Among these are two by Spitz on anxiety in infancy, and a lengthy description by Dawes of *"Psychoanalysis of a Case of Grand Hystehia of Charcot in a girl of Fifteen."* The study by Robbins and O'Neil of follow-up material in diagnosed cases of childhood hysteria sheds some badly needed light on a troublesome aspect of pediatric psychiatry, and quite properly points up the need for more care when making the original diagnosis.

For this reviewer, the most stimulating article in the collection is that of Miles, Barrabee and Finesinger on *"Evaluation of Psychotherapy."* This is a scrupulously documented follow-up study of sixty-two cases of anxiety neurosis. While no startling or unexpected results are adduced, the attention to detail and the control of variables in themselves lift it far above the average. There is in addition a survey of the literature on follow-up studies which is valuable in itself.

It would appear that the editor has attempted to present herein a selection of material about the neuroses which will be enlightening to specialists or practitioners in other fields as well as to the psychiatrist. Certainly there is much in the volume which will be found useful and enlightening. Unfortunately, however, as in all attempts to provide all things for all people, there inevitably must result a dilution which detracts from the book's worth and one fears this has happened here.

John H. Houck, M.D.

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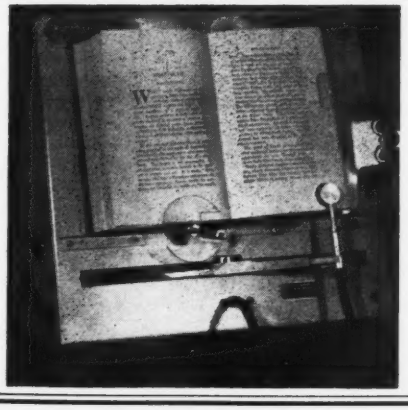

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